(2)

AD-A237 790

ON PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
		FINAL 15 Dec 87 to 14 Dec 90

4. TITLE AND SUBTITLE

STUDY OF VARIOUS PROBLEMS IN STATISTICAL PLANNING

5. FUNDING NUMBERS

AFOSR-88-0092
61102F 2304/A5

6. AUTHOR(S)

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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

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RIVERSIDE, CA 92521

AFOSR-TR

8. PERFORMING ORGANIZATION REPORT NUMBER

91 0547

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

AFOSR/NM
Bldg 410
Bolling AFB DC 20332-6448

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

AFOSR-88-0092

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for public release;
distribution unlimited.

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

The research done under the Grant AFOSR-88-0092 during the period December 1989-December 1990 are (1) efficiency of connected binary block design when a single observation is unavailable (2) determination of optimal experimental conditions using dispersion main effects and interactions of factors in replicated factorial experiments (3) main effect plans with an additional search property for 2^m factorial experiments.

14. SUBJECT TERMS

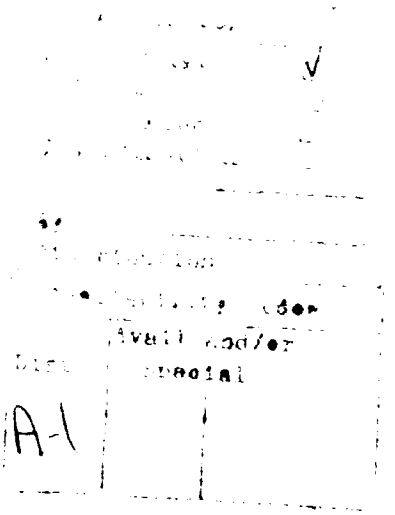
15. NUMBER OF PAGES

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UL

Annual Report

Project Title:	Study on Various Problems In Statistical Planning
Principal Investigator:	Subir Ghosh
Period:	December 1989 - December 1990
Grant No.:	AFOSR-88-0092
Program Manager:	Dr. Jon A. Sjogren Department of Mathematics and Information Sciences Air Force Office Of Scientific Research Bolling Air Force Base DC 20332-6448



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Annual Report

0 Summary

The research done under the Grant AFOSR-88-0092 during the period December 1989-December 1990 are (1) efficiency of connected binary block design when a single observation is unavailable (2) determination of optimal experimental conditions using dispersion main effects and interactions of factors in replicated factorial experiments (3) main effect plans with an additional search property for 2^m factorial experiments.

1 Research Done

1.1 Efficiency of connected binary block designs when a single observation is unavailable.

Please see enclosed Technical Report No. 182.

1.2 Determination of optimum experimental conditions using dispersion main effects and interactions of factors in replicated factorial experiments.

Please see enclosed Technical Report No. 183.

1.3 Main effect plans with an additional search property for 2^m factorial experiments.

Please see enclosed Technical Report No. 184.

2 Publication

We present the list of published, accepted and submitted papers during the period December 1989-December 1990 under the AFOSR grant.

Published

1. Ghosh, S. and Namini,H. (1990). Influential observations under robust designs. Proceedings of coding Theory and Design Theory, Part II (Design Theory). The IMA volumes in mathematics and its applications, Vol. 21, pp. 86-97. Springer-Verlag. New York.

2. Ghosh, S. and Lagergren, E. (1990). Measuring dispersion effects of factors in factorial experiments. Statistical Design and Analysis Of Industrial Experiments, Ch. 16, pp. 459-478. Marcel Dekker, Inc.

3. Ghosh, S. and Lagergren, E. S. (1990). Dispersion models and estimation of dispersion effects in replicated factorial experiments. *J. Statist. Planning and Inference*, Vol. 26, No. 3, 253-262.

Submitted

1. Ghosh, S., Kageyama, S. and Mukherjee, R. (1990). Efficiency of connected binary block designs when a single observation is unavailable. 17 manuscript pages. *Annals Of Institute Of Statistical Mathematics.*

2. Ghosh, S. and Duh, Y-J. (1990). Determination of optimum experimental conditions using dispersion main effects and interactions of factors in replicated factorial experiments. 15 manuscript pages. *Journal Of Applied Statistics.*

3. Ghosh, S. and Talebi, H. (1990). Main effect plans with an additional search property for 2^m factorial experiments. 27 manuscript pages. *J. of Statist. Planning and Inference.*

3 Conferences

3.1 Invited

Presented two invited talks at the International Workshops on Linear Models, Experimental Designs and Matrix Theory, August 6-8, 1990, Tampere, Finland.

3.2 Presenting Contributed

Presented a contributed paper at the 2nd World Congress of the Bernoulli Society and 53rd Annual meeting of the Institute of Mathematical Statistics, Uppsala, Sweden, August 13-18, 1990.

4 Interactions

4.1 Students

Two students Mr. Hooshang Talebi and Mrs Yi-Jing Duh have completed their Ph.D work under my direction.

4.2 Edited

I have edited a book "Statistical design and analysis of industrial experiments", Subir Ghosh editor, Marcel Dekker, Inc., New York (1990). Twenty-five researchers (including myself) from academia and industries have contributed to the book.